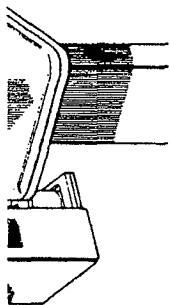


## Appendix 1



Schematic of a fully automatic, cassette-loaded, epitaxial reactor. Key: 1,4: Cassette ports; 2: wafer transfer chamber; 3: process chamber; 5: wafer handling mechanism.  
*Courtesy of ASM Epitaxy, Phoenix, Arizona.*

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# VLSI FABRICATION PRINCIPLES

## Silicon and Gallium Arsenide

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Second Edition

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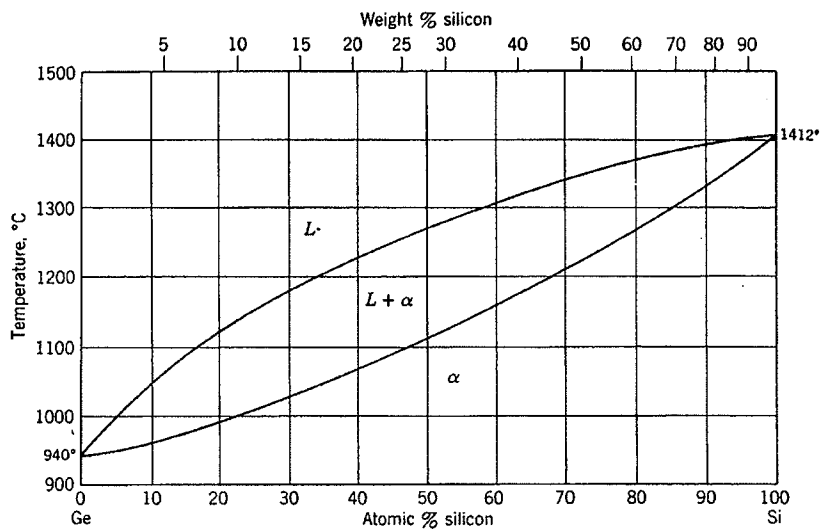


Fig. 2.3 Binary isomorphous phase diagram: The Ge-Si System. from Hansen and Anderko, *Constitution of Binary Alloys*, McGraw-Hill, New York (1958) [2]. Used with permission of the McGraw-Hill Book Company.

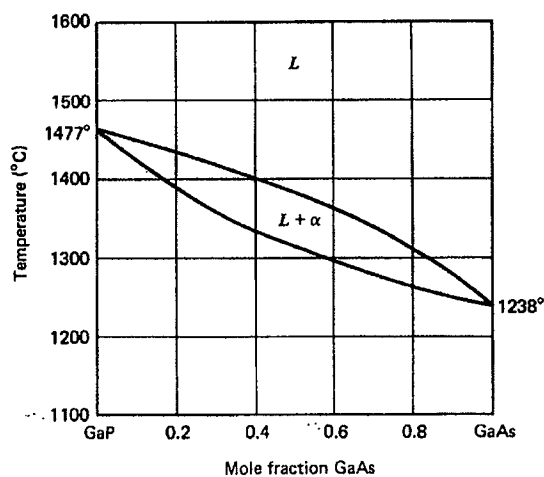


Fig. 2.4 The GaAs-GaP system. From Antypas [5]. Reprinted with permission of the publisher, The Electrochemical Society, Inc.

this reason, and most electronic properties of

The energy gap of  $n$  two extremes associated only approximately linear is given by

The indirect gap ( $\chi$ )

Combining these effects  $x \leq 0.43$ , but indirect gap of indirect gap  $\text{Al}_x\text{Ga}_{1-x}$  tors. Moreover, the surface when its surface dangling an extension of its crystal exploited in the fabrication

The ternary alloy  $\text{GaAs}_{0.6}\text{P}_{0.4}$  is mismatched device quality material thick buffer layer, graded top, is grown between the misfit dislocations which the GaAs substrate.

More complex solid made. For example,  $\text{III}_x^{\text{A}}\text{III}_{1-x}^{\text{B}}\text{V}_y^{\text{C}}\text{V}_{1-y}^{\text{D}}$ ,  $\text{III}_x^{\text{A}}\text{II}_y^{\text{B}}$  and are used in some device scope of this book.

## 2.2.4 Eutectic Diagrams

Eutectic diagrams result its overall freezing point of molten mixture has a minimum value is known as the eutectic temperature. The eutectic composition is called the eutectic composition. The components are completely soluble in the solid phase. Referring to Fig. 2.4: